Memo

To: Kristina Tong, Olivia Romano, and Gail Terzi (USACE), Kate Thompson (Ecology), Karla Kluge (City of Tacoma), Matt Curtis (WDFW), Scott Sissons (Pierce County), Kimberly Owens and Chan Pongkhamsing (USEPA),

From: Mark Rettmann

CC: Dave Myers, Bill Rehe, Tony Warfield (Port of Tacoma)

Date: August 28, 2015

RE: Existing Berm Grading Revision
Upper Clear Creek Mitigation Site (UCCMS) Project

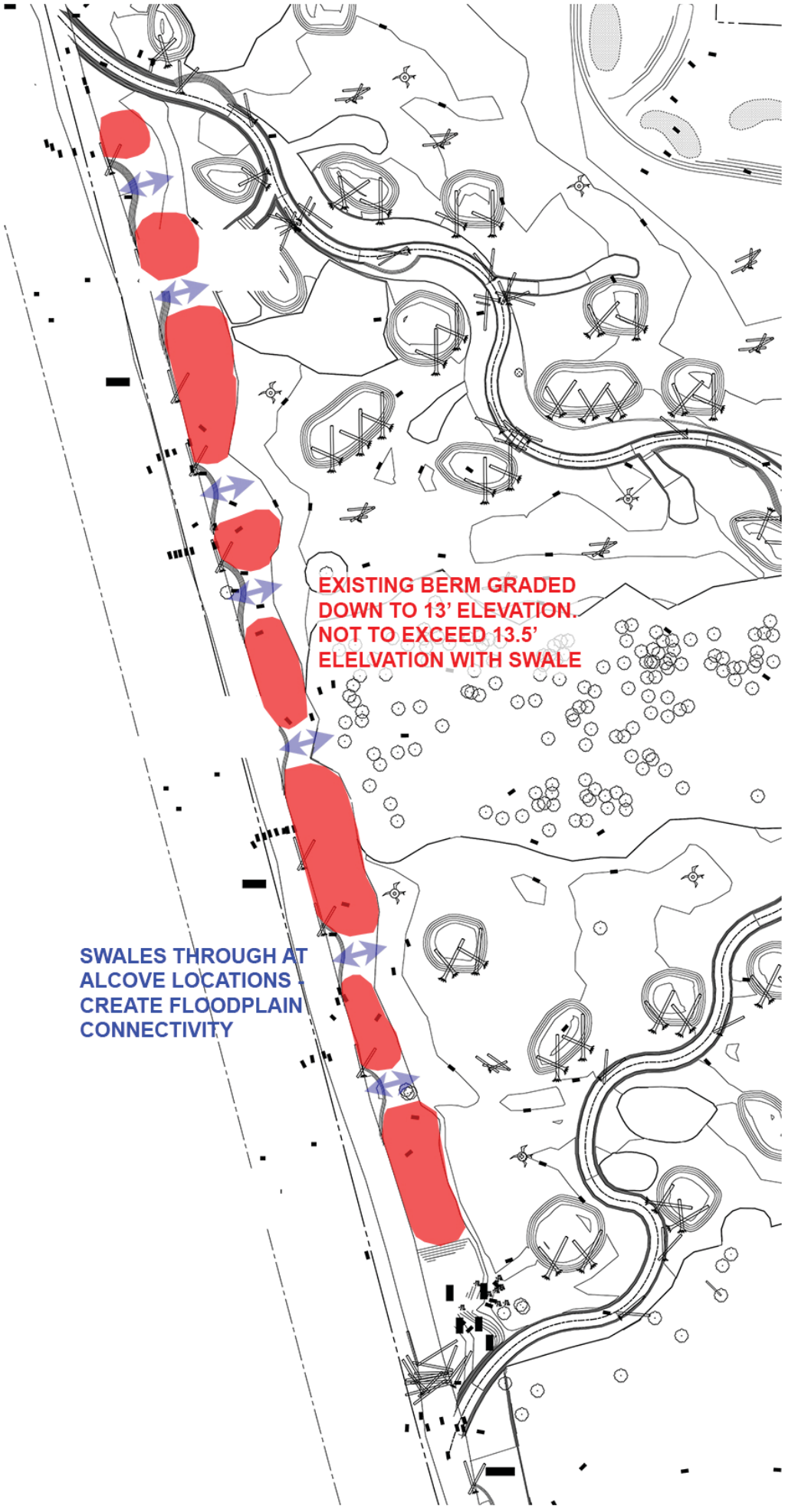
The purpose of this memorandum is to summarize excavation/grading revisions to the right bank berm of the existing channel downstream of Backwater Channel 1 (BC1). We have observed that the water surface elevation (WSE) at the downstream end of the project area is higher than anticipated likely due to a combination of higher upstream inflows and a higher water surface downstream of the project site. As such, achieving final design grades for the excavation of the berm down to 12.5 feet (MLLW) is likely not possible without significant impacts to construction methods, schedule, access, water quality, and planting plan revisions.

Over the past month the downstream WSE has been gradually increasing, not decreasing as typically encountered for summer base flows. Most interestingly, this increase has occurred with no significant measurable precipitation. The week of August 6, 2015 the downstream WSE is near 12.8 feet (MLLW), 0.3 feet above final design grades. Data collected by Herrera downstream of the site in 2010 for the WSDOT mitigation site showed the same upward summer trend, so it is highly possible the WSE will continue to be high for this summer. Field measurement by USGS at gauge #12102175 over the last 7 years suggests that tailwater conditions can vary between 0.2 to 0.6 feet at any given discharge due to the low gradient nature of the channel. As such, this "backwatered" WSE at the downstream end of the site appears to be highly variable and likely fluctuates throughout the year and from year-to-year. Based on the data, and variations we have observed during construction over the past two years, we expect ground elevations as high as 13.0 to 13.5 feet (MLLW) will support wetland conditions and vegetation.

To ensure additional floodplain connectivity between the existing channel and new constructed floodplain at lower flows, the berm grading will be revised as follows (see attached graphic):

1. Rough grade to elevation 13 feet with excavation material hauled away.
2. Periodic excavation of a swale at every alcove down to as close to elevation 12.5 feet as possible. These excavations will connect the channel to the site wetland floodplain. Each swale shall be approximately the width of the alcove's length.
3. Excavation from the swale may be placed on the excavated berm, provided the added material does not raise the berm above 13.5 feet elevation. (13.1-13.2 feet elevation is anticipated).

These revisions will be reflected on the project as-built survey and will be documented in the as-built report.



UCCMS Berm Revision - Downstream of BC1
August 28, 2015